

REMARKS

Status of Claims:

Claims 1-8 are present for examination.

IDS Acknowledgement:

The Examiner did not acknowledge receipt of the IDS filed July 26, 2004. Accordingly, applicant requests that the Examiner acknowledge receipt of the IDS filed July, 26, 2004.

Obviousness Rejection:

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (AAPA) in view of Choi et al. (U.S. Patent Number 6,429,918 B1)(hereinafter Choi).

With respect to claims 1-8, as amended, the rejection is respectfully traversed.

Independent claim 1, as amended, recites an active matrix type liquid crystal display device comprising:

“a pair of substrates;

a liquid crystal sealed between said pair of substrates;

a plurality of data lines and a plurality of scanning lines which are arranged so as to intersect each other on one surface of a first of said pair of substrates;

a switching element having an electric current path, one end of which is connected to a corresponding one of said data lines, and having a control terminal which is connected to a corresponding one of said scanning lines;

a pixel electrode which is provided above said data lines via an insulation film, and is connected to the other end of the electric current path of said switching element;

a common electrode which opposes said data lines via said insulation film, said common electrode having slits in portions overlapping said data lines;

a black matrix which is arranged on a second of said pair of substrates in a predetermined pattern, said black matrix being covered by a flattening film; and

a first conductive film provided on said flattening film so as to oppose said data lines via said slits, said first conductive film being set to a common electric potential with said common electrode;

wherein said first conductive film overlaps said portions of said common electrode where said slits are formed;

wherein said first conductive film overlaps at least a portion of said black matrix;

wherein an electric field can be generated between said common electrode and said pixel electrode; and

wherein at least some portions of said common electrode that are adjacent to said slits overlap at least some portions of said data lines."
(Emphasis Added)

An active matrix type liquid crystal display device including the above-quoted features has the advantage that a common electrode that opposes data lines has slits in portions overlapping the data lines and at least some portions of the common electrode that are adjacent to the slits overlap at least some portions of the data lines. By having at least some portions of the common electrode that are adjacent to the slits overlap at least some portions of the data lines, an electric field generated from a data line can be partially terminated at the portion of the common electrode that is overlapping the data line. Accordingly, leakage of the electric field to the liquid crystal can be reduced and, thus, the occurrence of defects in a displayed image due to a leak of the electric field can be reduced. Also, because slits are formed in the common electrode in portions overlapping the data lines, the opposing area of the data lines and the common electrode is reduced and, thus, electrostatic capacitance stored between the data lines and the common electrode can be reduced. As a result, a signal delay in the data lines can be reduced. (Specification; paragraphs [0106], [0111], [0129], [0130]; FIG. 4, FIG. 7, references 106, 111b, 115).

Neither AAPA nor Choi, alone or in combination, disclose or suggest an active matrix type liquid crystal display device including the above-quoted features with a common electrode that opposes data lines having slits in portions overlapping the data lines and at least

some portions of the common electrode that are adjacent to the slits overlapping at least some portions of the data lines. The Examiner notes that AAPA does not disclose that the common electrode has slits in portions overlapping the data line. The Examiner then points to Choi as disclosing a device wherein the common electrode has slits in portions overlapping the data line and asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a common electrode having slits in portions overlapping the data line since one would be motivated to prevent light leakage.

However, in the device in Choi, no portion of the counter electrode branches 16a overlap the data bus line 13. (Choi; FIG. 2, 3, references 13, 16a). Instead, in the device in Choi, the counter electrode branches 16a are to the side of and parallel to the data bus line 13. (Choi; FIG. 2, 3; column 4, lines 19-29). With the device of Choi, because no portion of the counter electrode branches 16a overlap the data bus line 13, an electric field generated at the data bus line 13 cannot be partially terminated by overlapping portions of counter electrode branches 16a. As a result, the device in Choi requires a black matrix that has a width wider than the data bus line 13 in order to shield the parasitic electric field generated from the data bus line. (Choi; column 4, lines 59-61; column 5, lines 26-40).

Therefore, independent claim 1, as amended, is neither disclosed nor suggested by the cited prior art and, hence, is believed to be allowable.

Independent claim 5 recites a method of manufacturing an active matrix type liquid crystal display device similar to the active matrix type liquid crystal display device of claim 1 and, thus, is believed to be allowable for at least the same reasons claim 1 is believed to be allowable.

The dependent claims are deemed allowable for at least the same reasons indicated above with regard to the independent claims from which they depend.

Conclusion:

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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